

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (previously presented) An apparatus for routing packets from a first network node to a second network node in a data network, comprising:

means for assigning and then sending a unique first node identifier (ID) to the first node, wherein the unique first node ID uniquely identifies the first node;

means for mapping the assigned unique first node ID with at least one VPN, wherein the unique first node ID is assigned, sent, and mapped by an entity other than the first node;

means for receiving a packet from the first node, said packet including the unique first node ID, and including routing information for routing said packet to a destination address associated with said second node;

means for examining the packet to identify the unique first node ID of the first node; and

means for using said unique first node ID, routing information, and the mapping between the unique first node ID and the at least one VPN to determine whether said first node is associated with at least one VPN.

2. (original) The apparatus of claim 1 further comprising means for routing the packet to the second node.

3. (currently amended) An apparatus for associating nodes in a data network with at least one virtual private network (VPN), the data network including an access network having at least one Head End device and a plurality of nodes, the access network further including at least one shared access channel utilized by a first and a second node of the plurality of nodes to communicate with the Head End device, said apparatus comprising:

means for assigning and then sending [[a]] unique first node ID to the first node;

means for mapping the assigned unique first node ID with at least one VPN, wherein the unique first node ID is assigned, sent, and mapped by an entity other than the first node;

means for receiving an address for the first node that is associated with at least one VPN;

means for receiving data from the first node in the access network;

means for identifying, within the received data, the address and unique first node ID of the first node; and

means for using said identified address, the identified unique first node ID, and the mapping between the unique first node ID and the at least one VPN to determine whether said first node is associated with at least one VPN.

4. (original) The apparatus of claim 3 further comprising means for mapping said first node to a particular sub-interface on the access network.

5. (previously presented) An apparatus for associating nodes in a data network with at least one virtual private network (VPN), the data network including an access network having at least one Head End device and a plurality of nodes, the access network further including at least one shared access channel utilized by a first and a second node of the plurality of nodes to communicate with the Head End device, said apparatus comprising:

means for determining whether said first node is a member of at least one VPN; and

means for if it is determined that said first node is a member of at least one VPN, assigning and then sending a unique identifier (ID) to the first node and binding the unique ID of said first node with said VPN to thereby cause said first node to be associated with said VPN, wherein the unique ID is assigned, sent, and then bound by an entity other than the first node, wherein the unique ID uniquely identifies the first node.

6. (original) The apparatus of claim 5 further including means for mapping a particular sub-interface of the Head End to said particular VPN.

7. (previously presented) The apparatus of claim 5 further comprising:

means for receiving at said Head End device a packet from said first node, said packet including a destination address corresponding to a second node in the network;

means for examining said packet to identify the unique ID of said first node; and

means for using said unique ID at said Head End device to determine whether said first node is a member of at least one VPN.

8. (original) The apparatus of claim 7 further comprising:

means for if it is determined that said first node is a member of a first VPN, determining at said Head End device whether the destination address of said packet is within said first VPN.

9. (original) The apparatus of claim 7 further comprising means for routing the packet to the second node.

10. (currently amended) An apparatus for configuring a Head End of an access network to route packets from a first node to a second node in the access network, the apparatus comprising:

means for associating particular network nodes on the access network with a first virtual private network (VPN);

means for assigning and then sending to the first node unique identifier (ID), wherein the unique ID is assigned and sent to the first node by an entity other than the first node, wherein the unique ID uniquely identifies the first node; and

means for ~~associating~~ mapping the assigned unique ID with the first VPN to thereby cause the first node to be associated with the first VPN, wherein the assigned unique ID is associated by the entity other than the first node.

11. (original) The apparatus of claim 10 further means for including mapping a particular sub-interface of the Head End to the first VPN.